APPENDIX A: ENGINEERING PLAN AND COST ESTIMATE

This appendix provides a summary of the plan formulation process, the draft conceptual plan for Celilo Village redevelopment, draft alternative site plans, and the cost estimate. For more detailed information regarding engineering design, please see Engineering Design Report DACW57-01-C-0022 (19 December 2001), available upon request.

1. PLAN FORMULATION

The plan for Celilo Village redevelopment presented in this appendix is preliminary and is only conceptual. To develop a final design many actions need to occur and considerably more coordination is required. The most important elements in developing the final design will be defining which residents have a legal right to reside in the Village and the final mix of homeowners and permitted residents.

The following describes how the conceptual plan was developed to this point.

Plan development was an iterative process that initiated with the concepts provided in the CTUIR "Celilo Village Redevelopment Study". Meetings were held with the Celilo Village residents, the Treaty Tribes' planning staffs, and Indian Health Services, to solicit opinions on possible redevelopment plans. Facilities were added to the plan in recognition of the Village's role in Treaty Fishing. Camping facilities were included to accommodate the Treaty Tribes' rights to temporarily reside at the Village during the fishing seasons. The IHS provided design criteria for the water and sewer systems.

One basic concept used in the development of the conceptual plan for the PAC process was to incorporate all reasonable facilities at a sufficiently high level to assure that the cost estimate would be on the "high side" when defining the possible scope of Corps involvement. Specific areas in which "high side" assumptions were made are:

- The number of residents to be provided housing units and relocation assistance under the Uniform Relocation Act. As described in the Real Estate Appendix, the Corps has a responsibility for 14 structures, but it is possible that the outcome of the BIA's determination of legal residency and implementation of the relocation laws may require more or fewer facilities to be provided. The cost estimate and Village layout therefore incorporate different possible structure totals.

- Treaty Fishing related facilities such as drying sheds, fish cleaning stations, and restrooms for temporary residents were included in the plan. It was assumed that two of each of these facilities would be needed to accommodate permanent residents and those fishermen temporarily camping at Celilo Village for fishing and ceremonial functions.

- Many options exist to temporarily relocate residents during construction. Options include: (1) Relocation of all residents to motels or apartments in nearby communities during the entire construction period. (2) Relocation of about one half of the residents while one half of the Village is constructed, followed by replacement into the new

structures. This process would be repeated with the remaining one half of the residents. (3) Temporarily locating about 7 of the new modular homes in the Village and moving about one half of the families into them while their permanent locations are rebuilt. The modular units would then be moved to the new improved sites, and the process repeated for the balance of the residents. This last approach would have the smallest social and cultural impact on the residents since they would not be relocated out of the Village for the construction period, and was favored by most of the residents. This approach was the most expensive, and it was the assumed approach for computation of project costs.

The estimated costs for O&M of the Village after completion of the redevelopment project assumed that a full time operation supervisor would be hired who would contract out for much of the maintenance. It is likely that once specific O&M tasks are defined, the operation supervisor could accomplish almost all activities and only minimal additional contracting costs would be incurred on a periodic basis.

2. DRAFT SITE DEVELOPMENT PLANS

Figure A-1 provides the general layout of the recommended plan for Celilo Village redevelopment. This plan is conceptual at this stage and will be finalized through additional meetings with the Celilo residents, the Tribes, and the BIA. The final design will be developed in the 60% design stage. This conceptual plan best reflects the desires of all parties. Alternative plans were also developed and refined, but ultimately discarded. These are presented in Figures A-2 and A-3.

3. COST ESTIMATE.

Table A-1 provides the cost estimate at current price levels ($12,061,000) and full-funded ($13,238,000). Table A-2 provides the cost estimates for specific items of the recommended plan. The following describes the specifics of the cost estimate.

3.1 Project Description:

The project change will consist of improving the infrastructure of Celilo Village within the general authorities provided by the CRTFAS and this report and authorization, and replacing the current substandard residential housing. Village improvements will include: new domestic water and sewage systems, replacement homes, roads (improve primary and secondary roads), fencing, limited irrigation and landscaping, fish drying sheds (2), restrooms (2), fish cleaning stations (2), net repair areas (2), dumpster pads (4), entry signs (1), parking area, safe railroad crossing, camping sites (12), remodeling existing longhouse, and dump station. Fred Cooper Consulting Engineers, Inc. was contracted by the Corps as part of the CRTFAS Contract E design effort to prepare an Engineering Design Report for Celilo Village.

An estimate has been prepared for the improvements discussed above and is based on the conceptual design for the Village. However, detailed plans and contract costs from the CRTFAS Contract D were used to develop the costs for identical features proposed for CeliloVillage.

3.2 Basis of Design.

The basis for the design is the PAC Report.

3.3 Estimate References:

ER 1110-2-1302 (Civil Works Cost Engineering)

EP 1110-1-8 (Construction Equipment Ownership and Operating Expense Schedule)

EI 01D010 (Construction Cost Estimates)

EM 1110-2-1304 (Civil Works Construction Cost Index System, CWCCIS)

3.4 Construction Schedule:

The proposed Celilo Village construction schedule is to award the contract in July, 2004. The contract will have a two-year duration. Subject to the project receiving authorization, a detailed schedule will be developed following such authorization and as designs progress.

a. Overtime. Overtime will not be required for this contract.

b. Construction Windows. N/A.

Acquisition Plan. It is anticipated that construction will require one to one and a half years to complete.

3.5 Subcontracting Plan.
Subcontracting is anticipated for the hazardous, toxic and radioactive wastes (HTRW); plumbing; electrical; asphalt paving; and landscaping.

3.6 General Estimating Information.

a. Sources of Historical Data. The contract costs for CRTFAS Contract D (March 2000) were used for costing identical facilities proposed at Celilo Village including: restrooms, fish cleaning stations, net repair areas, fish drying sheds, dumpster pads and an entrance sign. These costs were updated to 2001 price levels using CWCCIS factors. The IHS provided costs for the proposed new domestic and sanitary water systems features.

b. Hazardous, Toxic and Radioactive Waste (HTRW) Remediation Costs. Lead based paint and asbestos are known to be present in the existing homes on the site. Costs have been estimated to identify these substances (quantity) in the homes and for proper disposal of these substances as required.

c. Site Access. Access to Celilo Village is available on existing roads.

d. Environmental Concerns. See the Celilo Village PAC Report.

e. Contingencies by Feature or Sub-Feature.

1) Construction Contingency. A contingency of 10% was used for the 14 account features including: restroom and shower buildings, fish cleaning stations, net repair areas, fish drying sheds and railroad crossing. The cost for these features were based on CRTFAS Contract D costs. A contingency of 25% was used on the remaining features to cover uncertainties in the quantities, materials to be excavated, and design.

2) Contingencies for Functional Accounts. The contingency included in the 01 account costs are 15% for acquisition and PL 91-646 Relocation Payments. Contingencies of 5% were included in the 30 and 31 accounts to cover uncertainties in engineering, design and construction management related to the 14 account discussed above.

f. Effective Dates for Labor, Equipment, Material Pricing. The effective date for all pricing is October 2001**.**

3.7 Quantities.
Quantities were provided by the designers. The quantities developed for Contract D were used for the features that were identical to those to be constructed under this project contract.

3.8 Labor Rates.
Labor rates were updated using recent Davis-Bacon information.

3.9 Mobilization (Mob), Demobilization (Demob) and Preparatory Work.
This was calculated as 5% of the direct costs. Mob was assumed to equal Demob.

3.10 Use of the Micro Computer Assisted Cost Estimating System (MCACES).

a. General. This CWE was estimated in MCACES.

b. Overhead, Profit and Bond. Field office overhead (FOOH) and home office overhead (HOOH) were input as a "rule of thumb" percentage for this type and size of project. The percentage varied depending on whether the feature involved the prime contractor and/or subcontractors. Profit was computed using the weighted guidelines sheet in MCACES. This project is not considered very risky, so the profit percentage is relatively low. Bond costs were computed using the built-in table in MCACES as a percentage.

3.11 Functional Costs:
Functional costs associated with this work were provided by the Task and/or Project Managers as follows:

a. 01 Account – Lands and Damages:

1) Land Acquisition for site improvements.

2) PL 91-646 Relocation Payments.

b. 30 Account – Planning, Engineering and Design:

1) Plans and Specifications: This item covers preparing plans and specifications, District review, technical review, value engineering studies, contract advertisement and award activities.

2) Engineering During Construction: This item consists of Engineering and Construction Division support to Construction Management during construction and participation in the prefinal and final inspections of the contracts.

3) Project Management Service and Coordination: This item covers managing and monitoring such matters as definition of scope of work, schedules, studies,

funding, programming, real estate studies and acquisition, and coordinating with the Tribes, Residents, BIA, and other interested groups and individuals.

c. 31 Account – Construction Management: This account covers construction management for the Celilo Village redevelopment contract.

4. OPERATION AND MAINTENANCE

A cost estimate for the Corps contribution for operations and maintenance at Celilo Village has been developed for the PAC. This estimate represents an attempt to quantify annual O&M costs on the project using the methodology agreed upon and reflected in the MOU. The estimate assumes a full time maintenance supervisor will be hired ($48,300) and additional operating costs will be incurred ($118,245). It is likely that O&M at Celilo will be less than the $166,245 per year estimate once coordination is completed with BIA and specific O&M items are identified. The capitalized equivalent of this annual O&M estimate will be transferred to BIA in accordance with the MOU. The capitalized value of $166,245 per year, for 50 years, at the project interest rate of 7-3/4% determined at the time of negotiations, is $1,828,694.

Under the MOU, after the completed functional portion of the project is turned over to the DOI-BIA, DOI "shall be solely responsible for operating, maintaining, repairing, and rehabilitating the Project or functional portion of the Project in accordance with Article IV" of the MOU.

Because the Corps acknowledges the critical need for Celilo Village governance planning to occur prior to construction, there will be an advanced transfer of $150,000 O&M dollars for the development and adoption of a governance plan. This $150,000 will be deducted from the total estimated amount of capitalized O&M transferred to the BIA after the completion of construction.

Table A-1. Cost Summary

****** CELILO VILLAGE PAC COST SUMMARY****** PAGE 1 OF 1

PROJECT: CELILO VILLAGE PAC — DISTRICT: PORTLAND — 13-May-03

LOCATION: CELILO VILLAGE, OREGON — P.O.C.: PAT JONES, CHIEF, COST ENGINEERING SECTION

CURRENT MCACES ESTIMATE PREPARED: Jul-01 — AUTHORIZ./BUDGET YEAR: 2003 — FULLY FUNDED ESTIMATE

EFFECTIVE PRICING LEVEL: Jul-01 — EFFECT. PRICING LEVEL: MAY 03

ACCOUNT NUMBER	FEATURE DESCRIPTION	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	OMB (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	FEATURE MID PT	OMB (%)	COST ($K)	CNTG ($K)	FULL ($K)
14- - -	FISH AND WILDLIFE FACILITIES													
	RESTROOM & SHOWER BUILDINGS	420	42	10%	462	3.2%	433	43	477	Jan-06	6.8%	463	46	509
	FISH CLEANING STATIONS	75	8	10%	83	3.2%	77	8	85	Jan-06	6.8%	83	8	91
	NET REPAIR AREAS	29	3	10%	32	3.2%	30	3	33	Jan-06	6.8%	32	3	35
	DRYING SHEDS	88	9	10%	97	3.2%	91	9	100	Jan-06	6.8%	97	10	107
	DUMPSTER PAD	7	1	10%	8	3.2%	7	1	8	Jan-06	6.8%	8	1	8
	ENTRY SIGN	5	1	10%	6	3.2%	5	1	6	Jan-06	6.8%	6	1	6
	RAILROAD CROSSING	217	22	10%	239	3.2%	224	22	246	Jan-06	6.8%	239	24	263
	CAMP SITES	239	24	10%	263	3.2%	247	25	271	Jan-06	6.8%	263	26	290
	OTHER FACILITIES	5,296	1,324	25%	6,620	3.2%	5,465	1,366	6,832	Jan-06	6.8%	5,837	1,459	7,296
	O & M	1,662	166	10%	1,828	3.2%	1,715	172	1,887	Jan-06	6.8%	1,832	183	2,015
	TOTAL CONSTRUCTION COSTS =====>	8,038	1,598	20%	9,636	3.2%	8,295	1,649	9,945	Jan-06	6.8%	8,859	1,761	10,621
01 - - -	LANDS AND DAMAGES	422	63	15%	485	3.2%	436	65	501	Aug-04	4.1%	453	68	521
18 - - -	CULTURAL RESOURCE PRESERVATION	225	23	10%	248	3.2%	232	23	255	Aug-04	4.1%	242	24	266
30 - - -	PLANNING, ENGINEERING AND DESIGN	1,219	61	5%	1,280	3.2%	1,258	63	1,321	Aug-04	4.1%	1,310	65	1,375
31 - - -	CONSTRUCTION MANAGEMENT	393	20	5%	412	3.2%	405	20	426	Jan-06	6.8%	433	22	454
	TOTAL COST ==========>	10,297	1,765	17%	12,061	3.2%	10,626	1,821	12,447		NA	11,297	1,941	13,238

APPROVED:

_____ CHIEF, ENGINEERING AND CONSTRUCTION DIVISION

_____ CHIEF, PROGRAMS AND PROJECT MANAGEMENT DIVISION

P. J. Jones CHIEF, COST ENGINEERING SECTION

APPROVAL DATE: 5/15/03

Table A-2. Project Elements Cost Summary

CONSTRUCTION COST SUMMARY WITH CONTINGENCIES				
COLUMBIA RIVER TREATY FISHING ACCESS SITES **CELILO VILLAGE POST AUTHORIZATION REPORT** **CURRENT WORKING ESTIMATE** **Update May 13, 2003**			**PORTLAND DISTRICT** **P.O.C. : PAT JONES** **COST ENGINEERING SECTION** **CENWP-EC-DX**	
Item	**Construction Costs ($)**	**Contingency ($)**	**Contingency (%)**	**Total Construction Costs ($)**
Mob-Demob	$398,024	$99,506	25%	$497,530
Sewer System Improvements	$719,496	$179,874	25%	$899,370
Potable Water System Improvements	$351,166	$87,792	25%	$438,958
Site Cleanup	$108,526	$27,132	25%	$135,658
Replacement Homes	$1,971,907	$492,977	25%	$2,464,884
New Water Well & Pumphouse	$235,129	$58,782	25%	$293,911
Restroom & Shower Building #1	$209,705	$20,971	10%	$230,676
Restroom & Shower Building #2	$209,705	$20,971	10%	$230,676
Fish Cleaning Station #1	$37,334	$3,733	10%	$41,067
Fish Cleaning Station #1	$37,334	$3,733	10%	$41,067
Net Repair Area #1	$14,568	$1,457	10%	$16,025
Net Repair Area #2	$14,568	$1,457	10%	$16,025
Longhouse Repair	$881,771	$220,443	25%	$1,102,214
Parking Area	$53,299	$13,325	25%	$66,624
Roadway	$215,783	$53,946	25%	$269,729
Drying Shed #1	$43,703	$4,370	10%	$48,073
Drying Shed #2	$43,703	$4,370	10%	$48,073
Wire Fencing	$8,265	$2,066	25%	$10,331
Fencing with Screening	$80,770	$20,193	25%	$100,963
Landscaping	$89,642	$22,411	25%	$112,053
Irrigation System	$27,764	$6,941	25%	$34,705
Landscaping Maintenance	$1,752	$438	25%	$2,190
Irrigation System Maintenance	$15,765	$3,941	25%	$19,706
Dumpster Pad	$7,446	$745	10%	$8,191
Entry Sign	$4,686	$469	10%	$5,155
Railroad Crossing	$217,290	$21,729	10%	$239,019
Camp Sites	$239,245	$23,925	10%	$263,170
Dump Station	$45,894	$11,474	25%	$57,368
Electrical System	$91,352	$22,838	25%	$114,190
O & M 50 years	$1,662,449	$166,245	10%	$1,828,694
TOTAL	$8,038,041	$1,598,250	20%	**$9,636,291**

Note: This sheet covers construction cost only. Lands & damages; cultural resource preservation; planning, engineering and design; construction management; and inflation are not included.